BEFORE THE

Federal Communications Commission

WASHINGTON, D.C.

In the Matter of	)	
	)	
Implementation of Section 17 of the	)	
Cable Television Consumer Protection	)	ET Docket No. 93-7
and Competition Act of 1992	)	
	)	
Compatibility between Cable Systems	)	
and Consumer Electronics Equipment	)	

COMMENTS OF GENERAL INSTRUMENT CORPORATION

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SUMMARY

GIC supports the Commission's compatibility proposals for existing equipment. These measures properly recognize the value of supplemental hardware -- particularly set-top boxes and newer, more advanced "broadband terminals" -- for achieving compatibility. More importantly, due to the unsynchronized technology cycles between the consumer electronics and cable industries, these broadband terminals will continue to play a significant role in forging compatibility solutions. The Commission must realize the ongoing importance of these advanced devices in this regard and avoid the adoption of rules that stifle innovations in this equipment area.

While GIC generally supports the Commission's long-term approach for new equipment, we urge the Commission to use the broad discretion accorded it by Section 17 to proceed cautiously in implementing its long-term compatibility proposals. We are troubled by several of the NPRM's long-term proposals. First, GIC strongly opposes the adoption of the current version of EIA/ANSI 563 if a revised version is not available by April 1994. EIA/ANSI 563 does not support today's broad array of cable services including audio privacy, simplified pay-per-view ordering, certain analog scrambling techniques, and electronic program guides. In addition, because this purely analog version is incompatible with a number of emerging cable innovations, including digital video compression and interactive multimedia services, its adoption will substantially impede the progress of

these innovations and thereby actually exacerbate, rather than ameliorate, the compatibility problem. The Commission should await the development of a revised analog/digital version of the Decoder Interface and establish a sufficient record on this revised version before mandating its incorporation into new cable ready TVs and VCRs.

Moreover, regardless of which version of the Decoder Interface is ultimately adopted, the Commission should allow all new cable technologies and video services that emerge after adoption of a particular version of the Decoder Interface to be implemented by cable operators even if these new technologies/services are incompatible with the current Decoder Interface standard. A rule requiring all cable services to be delivered through the Decoder Interface will constitute a de facto moratorium on such innovative cable services and technologies in direct contravention of the overriding objectives of the 1984 and 1992 Cable Acts.

The Commission's proposal to disallow cable operators from charging for component descramblers/decoders is misguided in two respects. On one level, this proposal relies too heavily on the Commission's rate regulatory framework which is still in a state of flux and which could be significantly altered or completely abrogated in the near term. On another level, this proposal flies in the face of substantial Commission precedent, including its unbundling requirement, its preference for benchmark over cost-of-service regulation, and its policy of requiring cost-

causative customers to incur the costs of their equipment use. The NPRM's proposals to encourage "in the clear" technologies must also be rejected. The Commission's preference for these conditional access methods is at odds with Commission precedent recognizing: (1) the need for security to protect intellectual property (i.e., programming) and (2) the virtues of scrambling. This preference is also wholly unsupported by the record in this proceeding.

GIC respectfully urges the Commission to refrain from prematurely evaluating and adopting digital transmission and scrambling/encryption standards. The imposition of such standards by the Commission was expressly considered and rejected by Congress. Moreover, given the dynamic nature of these emerging technologies, the premature evaluation and/or adoption of standards in this area could produce inefficient outcomes. Equally important, even if video security standards are eventually developed by standard-setting industry groups and thereafter prescribed by the Commission, in no event should the Commission authorize the incorporation of descramblers/decoders in consumer electronics equipment.

Finally, any standards the Commission ultimately adopts must be equally applicable to all video distributors to ensure both a level playing field and a compatibility interface across these diverse distribution media.

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COMMENTS OF GENERAL INSTRUMENT CORPORATION

General Instrument Corporation ("GIC") submits these comments in the above-captioned proceeding.[1]

I. GIC'S INTEREST IN THIS PROCEEDING

GIC is a world leading manufacturer of equipment for broadband communications applications, including subscriber equipment such as addressable converters and descramblers; headend equipment for modulation, signal processing, and scrambling; and distribution equipment such as fiber optic cable, coaxial cable, and RF distribution amplifiers and filters.

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[1] Implementation of Section 17 of the Cable Television Consumer Protection, Compatibility between Cable Systems and Consumer Electronics Equipment, Notice of Proposed Rulemaking, ET Docket No. 93-7, FCC 93-495 (released December 1, 1993) ("NPRM").

GIC pioneered the development of digital video compression technologies and has commitments to supply such equipment to the broadband communications industry beginning in 1994. The company has announced plans to incorporate, in cable television subscriber equipment (i.e., "broadband terminals"), computing power equivalent to that of a personal computer directed to providing advanced communications services.[2]

GIC is currently supplying digital video compression equipment to the satellite programming industry, and is a leading manufacturer and supplier of encryption equipment for the home satellite television market. GIC is also a proponent of two all-digital high definition television systems that have been under consideration as the advanced television broadcast standard and, in May, 1993, joined with other all-digital proponents in a Grand Alliance to build a unified system for consideration as the U.S. standard.

Finally, GIC is a member of the Cable-Consumer Electronics Compatibility Advisory Group ("C3AG") and has participated in many of its deliberations.

Because the Commission's adoption of equipment compatibility rules will have a dramatic effect on various aspects of GIC's core businesses, GIC is a vitally interested party to this proceeding.

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[2] GIC's Communications Division was recently created through the consolidation of the Jerrold Communications Division and the VideoCipher® Division. Many cable television products developed by GIC bear the Jerrold name.

II. PROPOSALS FOR EXISTING EQUIPMENT

A. The NPRM's Short-Term Measures Will Satisfy Section 17's Compatibility Objectives

GIC generally supports the NPRM's short-term proposals for achieving compatibility. These short term measures, including the provision of supplemental equipment to requesting subscribers and the adoption by cable operators of consumer education programs, will meet Section 17's compatibility requirements. Specifically, consumers will be able to:

- watch one channel while simultaneously recording another;
- record consecutive programs (scrambled or unscrambled) appearing on two different channels; and
- use the advanced television picture generation and display features of their consumer electronics equipment.

Consumers will be able to employ these measures with the television receivers and video cassette recorders now in their homes.

These solutions are achievable in large part due to the valuable contribution set-top boxes and associated equipment have made and will continue to make to the compatibility conundrum. Historical functions of the cable television converter or set-top box have included: (1) the tuning of frequencies that TV tuners cannot tune; (2) the elimination of interference that cannot be eliminated by TV tuners; and (3) the descrambling of scrambled video programming. Even as some of these historical functions shift out of the set-top box and into the TV set, as the NPRM

envisions, new functions and new technologies are being developed by the cable TV, computer, and other industries. These new functions and technologies, which will include, among other things, decompressing compressed digital video signals and providing as yet undefined interactive multimedia capabilities, will emerge first in new "broadband terminals" which may or may not have "set-top" locations. Because it typically takes TV set manufacturers three years from design to production of new features, it is inevitable that they will lag behind. Moreover, these new broadband terminals offer more powerful capabilities that cannot reasonably be expected to be included in mass market TV sets, except, perhaps, in high end units.

In fact, broadband terminals have already advanced significantly since the Congress began its deliberations on cable TV legislation, and many of the perceived deficiencies have been eliminated. Such units are now routinely available with remotely activated bypass features that restore full use of the features of the TV set with non-scrambled channels.[3] Devices are available to allow consumers to watch one channel while taping another channel.[4] Finally, although a consumer might not know how to set the clock on his VCR, these broadband terminals

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[3] All Jerrold/GIC set-top boxes and broadband terminals manufactured since 1987 contain the internal electronics to control bypass switches, and many of them contain the bypass switch itself. For example, all units supplied to CableVision of Boston since 1983 now contain bypass switches.

[4] The Jerrold Watch-n-Record® has been in production for 1 1/2 years.

receive time information from the headend controller, so switching channels takes place properly. Remote controls can be purchased from a variety of sources that work with these units, and remote controls are, or soon will be, available at regulated prices from cable operators. VCRs are now available from several manufacturers which can control the broadband terminal, and third party accessories, such as "VCR Plus," support recording of multiple programs with a wide array of VCRs and broadband terminals. In addition, broadband terminals now provide new features that were not available several years ago, such as electronic program guides, messaging features, and on-screen displays.

The Commission must realize the ongoing importance of these advanced broadband terminals in forging compatibility solutions and in delivering new technologies and services to consumers, and should thus avoid the adoption of regulations that would stifle innovations in this equipment area.

B. Scrambling of the Basic Tier Should Be Prohibited Unless it is Necessary to Protect Against Substantial Theft of Basic Service

While GIC generally supports the NPRM's proposal to prohibit the scrambling of basic tier programming,[5] we urge the Commission to take into account the unique requirements of some cable system environments where piracy of basic service is rampant. Most cable systems generally do not scramble the basic tier if theft

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[5] NPRM at ¶ 13. GIC does not support, nor do we believe that the NPRM proposes, the unscrambled delivery of expanded tier programming.

of this service is not a problem. This practice should be encouraged in order to promote Congress' compatibility objectives. However, some cable systems have found, principally with respect to service to Multiple Dwelling Units, that substantial piracy of basic cable service occurs if these signals are not scrambled. Consequently, these cable systems have resorted to scrambling of the basic tier or a portion of the basic tier. The Commission's compatibility rules should recognize these unique situations and allow cable operators to scramble/encrypt basic channels if they determine that it is needed to protect against substantial theft of basic cable service.

This approach is consistent with Section 17 which, in its recognition of a cable operator's right to protect its signals from theft, makes no distinction between basic service and other cable services.[6] Moreover, a provision of the Senate bill, which expressly prohibited scrambling of "any local broadcast signal,"[7] was deleted by the Conference Committee, thereby indicating Congress' decision to avoid such an outright prohibition on scrambling of basic tier signals.[8] Thus, if the Commission decides to prohibit the use of scrambling on the basic tier,

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[6] See 1992 Cable Act §§ 17(b)(2), (c)(1)(A), (c)(1)(B).

[7] S.12, 102d Cong., 2d Sess. § 17(d)(1) (1992).

[8] See 2A Sutherland Statutory Construction § 48.04, at 325 (5th ed. 1992) ("[W]here the language under question was rejected by the legislature and thus not contained in the statute it provides an indication that the legislature did not want the issue considered").

notwithstanding this contrary legislative intent, at the very least it must also adopt the exception to this scrambling prohibition which the Senate provision properly included in order to "protect against the substantial theft of cable service."[9] Such an exception is essential to accommodate those cable systems that unfortunately are plagued by rampant piracy of the basic service tier.

III. PROPOSALS FOR NEW EQUIPMENT

A. The Commission Should Proceed Cautiously in Implementing its Long-Term Compatibility Proposals

The Commission should adopt a cautious approach toward implementing its compatibility proposals for new equipment. Adoption of the Commission's long-term compatibility proposals by the April 1994 deadline is not required by Section 17. Indeed, aside from the three specific functions of consumer electronics equipment that the statute seeks to restore[10] and the specific directives regarding converters and remote controls[11] (all of which are adequately addressed by the NPRM's short-term proposals), Section 17 accords the Commission considerable

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[9] S.12, 102d Cong., 2d Sess. § 17(d)(1) (1992).

[10] See 1992 Cable Act §§ 17(c)(1)(A)(i-iii), (c)(2)(B)(i)(I-III). These three functions permit a subscriber to: (1) watch one channel while simultaneously taping another; (2) use a VCR to tape two consecutive programs on different channels; and (3) use advanced television picture generation and display features, i.e., "picture-in-picture" capabilities.

[11] Id. §§ 17(c)(2)(B-E).

discretion to design and implement long-term compatibility solutions.

For example, Section 17(b)(2) was substantially modified in conference to confer broader discretion on the Commission in determining whether and, if so, under what circumstances to permit cable operators to scramble or encrypt their signals.[12] Moreover, rather than instructing the Commission as to the specific regulatory requirements for achieving long-term compatibility solutions, Section 17 merely directs the Commission to balance the costs and benefits of imposing compatibility requirements against cable operators' need to protect their signals from theft.[13] GIC respectfully urges the Commission to use the broad authority accorded it by Section 17 to proceed deliberately in implementing the NPRM's long-term compatibility proposals.

Those clamoring for the immediate imposition of cable standards or for moratoria on cable innovations confuse notions of "compatibility" and "transparency." "Compatibility" means products work together; "transparency" signifies an added dimension of consumer ease of use. While the pursuit of a more enduring transparent interface between video delivery systems and

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[12] See 1992 Cable Act § 17(b)(2) (deleting Senate bill's outright prohibition on scrambling of local broadcast signals and providing that "the Commission shall determine whether and, if so, under what circumstances to permit cable systems to scramble or encrypt signals or to restrict cable systems in the manner in which they encrypt or scramble signals ...").

[13] See id. §§ 17(b)(1), (c)(1)(A-B).

consumer electronics equipment is a laudable theoretical objective, it is elusive as a practical matter given the unsynchronized technology cycles of these two industries.[14] Even if such seamless interoperability were attainable, it would entail unacceptable additional costs for all parties involved without corresponding incremental benefits. Importantly, Section 17 of the 1992 Cable Act does not require the Commission to go this far. Rather, the Commission is directed to find means of assuring compatibility, not transparency, between TVs, VCRs, and cable systems. Thus, adoption of the short-term measures proposed in the NPRM by the April 1994 deadline satisfies the statutory mandate by allowing otherwise conflicting components to work together to achieve a desired result.

Moreover, the Commission must realize that attempting to force high levels of compatibility at the expense of the degradation of signal security and/or the stifling of cable technological innovation would impose very significant costs that ultimately would be borne by subscribers. While GIC supports the Commission's long-term proposals to approach a more transparent interface between the products of the cable and consumer electronics industries, these proposals should be pursued with the degree of caution necessary to avoid the derailment of equally significant congressional and Commission policy objectives. Such an approach is consistent with Section 17's

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[14] For a further discussion of the technological disjunction between the cable and consumer electronics industries, see discussion at 19-20, infra.

vision of an ongoing compatibility dialectic in which the Commission

> periodically review[s] and, if necessary, modif[ies] the regulations issued pursuant to this section in light of any actions taken in response to such regulations and to reflect improvements and changes in cable systems, television receivers, video cassette recorders, and similar technology.[15]

In short, the Commission's previously expressed inclination to "develop[] rules that provide the least possible obstacle to technical improvements in both cable television and consumer electronics ..."[16] is precisely the circumspect approach which should be pursued with respect to the Commission's long-term compatibility proposals.

B. Compatibility Proposals for New Consumer Electronics Equipment Marketed as "Cable Ready"

1. The IS-6 Channel Identification Plan Should Be Adopted for Analog Video Signals

At one time TV sets did not tune certain frequency bands utilized by cable systems, including, for example, frequencies below 54 MHz, 88-174 MHz, and 216-470 MHz. Indeed, prior to adoption of the All Channel Receiver Act, TV receiver manufacturers often did not supply a tuner capable of tuning UHF TV channels in those markets where there were few UHF TV stations. To solve this problem, a set-top box was needed to "convert" the video signal from the cable frequency on which it

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[15] 1992 Cable Act § 17(d).

[16] Compatibility Between Cable Systems and Consumer Electronics Equipment, Notice of Inquiry, 8 FCC Rcd. 725 (1993), at ¶ 17.

was transmitted to a frequency that could be received by the TV set.

GIC supports the adoption of the IS-6 channel plan up to 1 GHz as proposed by the NPRM,[17] because adherence to this standard will minimize the need for set-top boxes for frequency conversion purposes, at least until cable systems begin using frequencies above 1 GHz.[18] We note, however, that the IS-6 standard does not provide a channel identification scheme for digital compression, whereby multiple video channels would be carried within a single 6 MHz channel slot. A "virtual channel" numbering plan will have to be developed for digital compression. Further, the number of compressed programs carried in a 6 MHz channel is likely to vary by channel and time of day depending upon the program content.[19] Since standards do not yet exist for digital video transmissions, and since such transmissions might use channel sizes larger or smaller than 6 MHz, the Commission should apply the IS-6 channel plan only to analog video signals.

Lastly, because TV sets which tune only to 1 GHz will be outmoded by the expansion of cable system capacity beyond 1 GHz

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[17] NPRM at ¶ 21.

[18] The broadband terminals currently under development for deployment in 1994 contain tuners that cover up to 1 GHz.

[19] See NPRM at n. 29. Moreover, the Commission should not expect that scrambled analog video channels will employ the same subcarrier frequency for audio as is used for unscrambled video. In order to protect unauthorized viewers from inadvertently hearing the audio for R-rated and X-rated scrambled programming, it is common practice to offset the audio subcarrier frequency to a frequency that differs from the broadcast television standard; this is commonly referred to as "audio privacy."

sometime in the next decade, the Commission should consider adopting a terminology that provides consumers with more information, such as "cable ready--600 MHz" for TV sets that tune to 600 MHz and "cable ready--1 GHz" for TV sets that tune to 1 GHz. Along with the NPRM's prescriptions for consumer education programs,[20] this more descriptive nomenclature will better inform cable subscribers, thereby reducing future compatibility problems.

2. GIC Generally Supports the NPRM's Proposals for Improved Technical Performance of Consumer Electronics Receivers and Supplemental Equipment

As numerous commenters in this proceeding correctly observe and as the NPRM implicitly recognizes, a major source of the compatibility problem is the level of interference currently caused by technical deficiencies in consumer electronics equipment. Because TV/VCR tuner performance has not improved significantly in this regard over the years, cable operators have frequently been forced to install set-top boxes to overcome

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[20] See id. at ¶¶ 15-16.

technical deficiencies such as "direct pickup"[21] and "tuner overload/adjacent channel interference."[22]

The Commission's proposed rules for improved receiver performance[23] should substantially eliminate these kinds of interference. While GIC generally supports these performance requirements as a necessary condition for calling a TV set "cable ready,"[24] the Commission's proposal to limit conducted emissions

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[21] Direct pickup occurs when the signal from an off-air TV broadcast station leaks into the TV set and interferes with the cable-delivered signal that is occupying that channel slot. The leakage may take place in circuitry built into the TV set or in switches added by the consumer to switch among several multiple video sources. In those instances when the cable system uses the same channel slot on the cable to deliver the station as is used for off-air transmission, the interference may take the form of ghosting. In those instances where strong land mobile paging signals leak into the TV receiver, the interference may appear to be a herringbone pattern or other annoying manifestation. In the past, this interference often occurred on cable TV channels 19 and 20, which occupy 150-166 MHz on the cable. In the future, such interference could also occur in the 800-900 MHz range. A set-top box eliminates this interference by delivering all cable signals on channel 2, 3, or 4, whichever is not used by a TV station in that city.

[22] Tuner overload or adjacent channel interference may occur in a TV set whose tuner was designed to give good performance in delivering weak off-air signals. Here, the adjacent channel signal strength or the total signal strength as delivered by the cable system is much higher than the TV set designer expected to encounter. Consequently, even though these TV sets might tune all channels currently used by cable systems, it would not be correct to call them "cable ready." Conversely, because set-top boxes employ tuners that were designed with the cable TV signal environment in mind, they are not susceptible to adjacent channel or tuner overload interference.

[23] See NPRM at ¶¶ 22-23.

[24] GIC supports the Commission's proposed technical improvements and performance standards for switches and other devices, as well. See id. at ¶¶ 24-25.

to -37 dBmV[25] is unnecessarily stringent for local oscillator emissions. Most single conversion tuners will be unable to meet this requirement. GIC understands that the C3AG will propose a less stringent limit, and we support that proposal. With the exception of the Notice's overly stringent conducted emissions specification, Jerrold/GIC's set-top boxes meet the proposed performance specifications. Consumer electronics manufacturers should not be permitted to continue to market their equipment as "cable ready" if it is susceptible to these kinds of interference.

The Commission should be aware, however, that these performance improvements will add some additional manufacturing costs to cable ready receivers, and this will translate into higher selling prices.[26] Consumers may be faced with a decision between a "cable ready" TV receiver and one that is substantially less expensive, is marketed as "tunes all cable channels," yet which is not "cable ready" under the Commission's rules. To avoid creating unrealistic consumer expectations, the Commission's rules should prohibit all advertising or marketing practices by consumer electronics manufacturers that lead consumers to believe that lower cost receivers are "cable ready" when they are not.

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[25] See id. at ¶ 23.

[26] Moreover, based on our experience with TV tuners in cable set-top boxes, we believe that it may be difficult to design a tuner that is both resistant to adjacent channel interference and tuner overload yet which also does a good job receiving weak off-air signals.

3. Decoder Interface Standard

a. Adoption of the Current, Antiquated Version of EIA/ANSI 563 Will Undermine the Objectives of Section 17

While GIC generally supports the Commission's goal of adopting a Decoder Interface as a mandatory requirement for new TVs/VCRs marketed as "cable ready",[27] GIC strongly objects to the NPRM's proposal to adopt the current, obsolete version of EIA/ANSI 563 if the revised analog/digital version is not available in sufficient time for the Commission to obtain comment on it before adoption of its rules in April 1994.[28] Because the current version of EIA/ANSI 563 is incompatible with certain analog scrambling methods, digital video compression, and the numerous interactive multimedia services on the horizon, adoption of this antiquated standard will invite numerous additional levels of incompatibilities between consumer electronics equipment and cable systems, in direct contravention of Section 17 of the 1992 Cable Act.

1). The Current Version of EIA/ANSI 563 is Incompatible with Digital Video Compression, Interactive Multimedia, and Other Services

The EIA/ANSI 563 interface was designed for the limited purpose of supporting an analog video descrambler. It was designed before, and therefore is incompatible with, digital

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[27] For TV sets that contain two tuners, the Commission must require the incorporation of two Decoder Interfaces to accommodate the picture-in-picture functionality of these sets.

[28] See NPRM at ¶ 20.

video compression, interactive multimedia, interactive on-screen channel guides, pay per view with barker channels, and impulse pay-per-view ordering.

EIA/ANSI 563's incompatibility with digital video compression stems from its inability to pass the compressed digital video signal in the form that it is being used by the cable TV industry. Moreover, EIA/ANSI 563 currently does not support communication between the digital decompression broadband terminal and the TV tuner to permit selection of a compressed channel that occupies only a fraction of a standard 6 MHz channel slot. Compressed digital program channels will be given channel numbers that do not comply with the IS-6 channel plan, and there is no way for the broadband terminal to communicate through the Decoder Interface to tell the TV set's tuner where to find a particular compressed digital program channel.

In addition, it is likely that the current version of EIA/ANSI 563 will not support interactive multimedia services. The interface was designed well before there was any consideration of such sophisticated services that may require additional control signal paths through the Decoder Interface. GIC believes that certain multimedia applications -- for example those that require the multimedia broadband terminal to control the action of the TV tuner -- would not be feasible with the current version of EIA/ANSI 563 since this version does not support such control.

While GIC supports the Commission's efforts to eliminate longstanding consumer confusion by clarifying the term "cable ready," the adoption of the obsolete EIA/ANSI 563 standard would work to subvert this laudable objective. Because "cable ready" sets incorporating the current version of EIA/ANSI 563 would only be "ready" for one-way, analog cable, not digital, interactive cable, the level of consumer confusion and frustration would be unnecessarily heightened.

2). The Commission Should Await Completion of the Revised Version of EIA/ANSI 563 And Allow Sufficient Comment on this Revised Version Before Adopting a Decoder Interface Standard

While the cable and consumer electronics industry representatives are now negotiating the details of a revised Decoder Interface to replace EIA/ANSI 563, GIC doubts that this work can be completed with ample time for interested parties to review the revised standard and submit comments on it, and for the C3AG to implement any necessary modifications. The brief comment period envisioned by the Commission[29] is simply insufficient to satisfy its reasoned decisionmaking obligations under the APA.

As discussed at 8, supra, Section 17 accords the Commission substantial discretion to forge long-term compatibility solutions. The Commission should use this broad authority here by taking adequate time before adopting a Decoder Interface standard. The unreasonable deadline of April 1994 for adoption

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[29] NPRM at ¶ 20.

of a Decoder Interface standard will disserve the public interest. This is especially true since, as discussed at 15-17, supra, the adoption of the current, antiquated version of EIA/ANSI 563 will introduce substantial incompatibilities between consumer electronics equipment and emerging cable technologies and services, in direct contravention of Section 17's overriding objective.

Accordingly, GIC respectfully urges the Commission to await the completion of the revised version of EIA/ANSI 563[30] and to allow ample time to build a sufficient record on this version prior to adopting a Decoder Interface standard.[31]

b. Requiring Cable Systems to Provide All Video Services in a Form Compatible with the Decoder Interface Will Undermine Congress' Goal of Promoting Innovation in Cable Technologies and Services

The NPRM proposes to require cable systems to "provide service in a form that is compatible with the Decoder Interface and component descrambler/decoder equipment used with that connector where 'in the clear' signal delivery methods are not

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[30] GIC notes that even the revised version of EIA/ANSI 563 in its current form may not be suitable for digital signals because it does not incorporate certain tuner specifications, such as tuner phase noise, that are essential for digital signals.

[31] This deliberate approach is consistent with the Commission's recommendations in its compatibility report to Congress in which the Decoder Interface requirement described by the Commission included the capability of accommodating both analog and digital cable signals. See "Consumer Electronics and Cable System Compatibility," Report to the Congress, October 5, 1993, at 65 ("Compatibility Report").

used."[32] This prohibition against delivering new cable services except through the Decoder Interface, however, could stifle the development of innovative technologies and services, contrary to Congressional intent.

As discussed in the previous section, the current version of EIA/ANSI 563 is incompatible with numerous emerging cable technologies in which billions of dollars have already been invested and which are scheduled for deployment beginning in late 1994 and early 1995. Even if the Commission waits to implement the revised analog/digital EIA/ANSI 563 standard, new cable technologies and services will eventually develop that will be incompatible with this revised standard, as well.

These incompatibilities with the Decoder Interface standard will arise because the technology cycles of the cable and consumer electronics industries are fundamentally unsynchronized. While consumer electronics devices -- especially TVs -- have life spans upwards of 15 years, cable operators expand system capacity and implement new technologies/services much more frequently. Consequently, despite the ability of the Decoder Interface to ameliorate compatibility problems, due to this technological disjunction between the two industries, there will always be a need for additional equipment, such as broadband terminals, to deliver new cable services and to implement new technologies that are incompatible with a particular version of the Decoder

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[32] NPRM at ¶ 29.